



APRIL 1988

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FIRST CLASS MAIL



# Ø BEAT



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**ZERO BEAT** is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Inc., P.O. Box 16521, Colorado Springs, Colorado 80935. Cost is \$0.10 per month for non-members or a \$4.00 per year subscription. Permission is given to reprint articles or excerpts provided credit is given. Deadline for submission of articles is the 21st of the month. Classifieds accepted anytime.

The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at Giuseppe's Depot Restaurant at 105, Sierra Madre at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Keith Goobie NYØT, 5335 Coneflower Ln., Colorado Springs, CO 80917 637-1525

## 2 Meter HT Antennas

*Bob Wille, KØFCY*

One often hears discussions on the local repeater frequency of how well certain 2 meter handie-talkie antennas work. A few years ago, I got interested in the subject and ran a few tests to determine the merits of the various antennas. Comparing antennas is a difficult task even under well controlled conditions, but when the antenna is mounted on an HT it is even worse.

Measurements of a standard rubber duck, a 1/4 wave, a 1/2 wave and a 5/8 wave antennas were made by having an operator transmit with an HT while the RF level was monitored a short distance away with a 5-element beam and a spectrum analyzer. Obviously, this is not as good as a calibrated antenna range, but the measured results appeared to be repeatable to within a dB or so. The results were rather interesting.

The performance levels of the rubber duck, 1/4 wave and 5/8 wave were all within a few dB of one another. The 5/8 wave was better than the 1/4 wave which was better than the rubber duck. (I will not claim specific values since the measurement technique probably isn't that accurate.) The 1/2 wave antenna performed about 8 to 10 dB better than the others. This data was consistent with my day-to-day experience on the air. None of the other antennas performed as well as the 1/2 wave.

Why should this be? Let's back up and recall that the 1/4 wave antenna requires a ground plane (or radials) underneath it. The same goes for the rubber duck (which is just a shortened 1/4 wave) and the 5/8 wave. With an HT, there is no reliable ground plane so the operation of these antennas is hampered. (Oh, sure, you do get some capacitive coupling from the HT to your body, but your body is not a good ground system either.)

Enter the 1/2 wave antenna, which requires no ground plane. Remember the old standby, the 1/2 wave dipole, commonly used on the HF bands? It is normally fed in the center but that would be inconvenient for an HT, so some manufacturers have figured out how to drive the dipole from one end, producing a 1/2 wave antenna suitable for an HT.

I wondered what kind of SWR the output of the HT experienced when using the various antennas. Although not foolproof, SWR usually is a good indication of how well an antenna is functioning or at least how good of a load the antenna is to the transmitter. I used a return loss bridge that was built into a conductive box about the size of a small HT. The antenna being tested was connected directly to it, so the box and the antenna simulated the HT. For the rubber duck, 1/4 wave and 5/8 wave antennas, the typical SWR measured using this technique was about 3:1. The best SWR (at resonance) was typically 2:1. Even more interesting was the fact that the resonant frequency varied considerably when the simulated HT was moved, even going outside the 2 meter ham band. Again, the 1/2 wave antenna looked much better. Its SWR was better than 2:1 across the entire 2 meter band, even when rotated into a variety

## "THE VIEW FROM THE PEAK"

George Hinds, N8CIX/0

### VALUE YOUR RIG? MALL PARKING LOTS ARE HAZARDOUS

Now that the figures on auto theft for 1987 are in, the alarm is sounding to be alert in shopping center malls. More than 47% of stolen cars were from mall parking lots.

Holidays are prime time for thefts of cars or contents of cars -- folks forget to lock the vehicle, or they forget to place packages out of sight in the trunk, or they leave mobile rigs and scanners visible to would-be thieves looking in parked cars.

Vehicle theft nationwide in 1987 cost \$41 billion! A side note to this: Colorado legislators in their infinite wisdom have recently voted down a bill that could aid police in identifying stolen cars and wiping out "chop-shops". Newspaper reports indicated legislators yielded to the pressure from owners of junk yards...

### "ALMOST HILL CLIMB TIME: SOME TRIVIA ABOUT THAT MOUNTAIN..."

After 30+ trips up and down Pikes Peak, plus time as an ham radio volunteer with the annual auto race to the peak, one becomes rather casual about a drive to the top. Recently I read a few facts that may interest you.

Eighteen (18) hours by burro to the top was an early method to reach the summit. To view the sun rising, burro riders started the afternoon before...

On June 30, 1891 the first Cog Railroad train reached the summit - the line was financed by a gent named Z. G. Simmons; you may sleep on a Simmons Mattress - one of his many ventures.

It was in 1883 that a toll carriage road reached the top from Cascade; in 1915 the Pikes Peak Auto Highway opened along much of the old carriage route. The first auto hill climb was in 1916; famed race driver Barney Oldfield placed 12th in that first race.

A forerunner of today's National Weather Service was the U.S. Signal Service; in 1871 a stone "summit house" was built, a single telegraph wire was strung and weather reports flowed down from the Peak. However, it was soon determined that the weather atop the mountain bore little or no relationship to weather at the base, and after a few years such reporting ended. The present summit house was built in 1964.

Lt. Zebulon Pike, for whom the peak is named from his sighting it in 1806, did not reach the summit and declared it would never be climbed. It was climbed in 1820. The first woman made the climb in 1858. We ride the train or drive our car to the summit in comfort; early travelers had it rough even in good weather.

In conclusion, if you are joining other hams to be with the annual auto hill climb this year, remember above everything to be prepared for extreme, very fast weather changes, so dress accordingly. The story is told of a couple, in 1911, who were lightly dressed at

the summit and wandered away. They were found, frozen to death a half-mile below the summit. In the man's pocket was found a postcard with the words, "Have a good time, and don't freeze to death on Pikes Peak."

### "IS HAM RADIO AN OLD MAN'S HOBBY IN CANADA AND THE U.S.?"

A recent issue of the "W5YI Report" points out that fewer than 5% of Canadian hams are under 30. The average age of amateurs to the north is 55; 60% of Canadian ham radio operators are over 50.

Striving to encourage youth in amateur radio, the CRRL and the CARF have proposed restructuring and the creation of a no-code class of license.

What about the U.S.?.... Well, the average age of our licensees is over 47 -- similar to Canada. If "no-code" is approved there, U.S. amateurs and the ARRL will have to look into the future and may have to make a choice between one more attempt to preserve tradition on the one hand, or the future survival of ham radio on the other.

### MARC HAS UHF SYSTEM "ON THE AIR" AT WOODLAND PARK

By the time you read this the Mountain ARC 443.65/448.65 repeater will be on-the-air, carrier access, low power; it will be located with the MARC 2-meter system. Use it when attending the MARC Swapfest at Red Rocks Campground off Highway 67 north of Woodland Park on July 23/24.

73, George N8CIX/0

## REPLIES TO THE OPEN LETTER TO THE AMATEURS OF COLORADO SPRINGS (KD0SO)

823 N. 15th  
Canon City, CO 81212  
March 10, 1988

Pikes Peak Amateur Radio Assn, Inc  
P.O. Box 16521  
Colorado Springs, CO 80935

Good Morning:

The "O-Beat" is passed around to the hams here at ETO, and when I read the Open Letter on linking from KD0SO in the March issue, I was compelled to write and express my views.

I agree with KD0SO that, not only is cross-band linking legal, but it is in general a very positive thing. Linking can allow versatility on VHF and UHF that simply cannot be achieved any other way. With the Novice enhancement, linking can allow Novices to communicate through links to other bands, expanding their enjoyment and allowing them to meet many more amateurs.

However, linking itself is not the issue that I personally object to, and I suspect that the majority of negative comments regarding KD0SO's link share my sentiments.

What I object to is the frequency that he has chosen to link to UHF, 146.52 is not just any simplex frequency, it is the national simplex frequency. Therefore the activity that occurs on .52 is somewhat different than other simplex frequencies. Many people transient to the area (visiting, through on business, or on vacation) use .52 because of its status as the national simplex frequency. All of these people, including myself use .52 from time to time when in the Colorado Springs area, and are unaware that our signals are being repeated on UHF.

It is the issue that someone's signal might be repeated without his knowledge that is objectionable to me, and probably many other hams. Simplex frequencies are used for many reasons-- for local communications, to avoid tying up a repeater, because some hams don't like repeaters, and yes, because they do offer more privacy than repeater operation. KD0SO should respect the wishes

of those who want to use simplex for simplex, and not be repeated especially without their knowledge.

Band plans were set up years ago to try to accommodate everyone's desires on the VHF and UHF operating bands. The band plan allows CW, SSB, FM simplex, FM repeaters, and satellites to co-exist in harmony. Repeating the national simplex frequency via a UHF link is imposing the views of a repeater enthusiast upon a simplex enthusiast. The converse argument could be levied for using say, 146.97 for simplex communication. There's no law against it, but it certainly doesn't respect the bandplan, nor does it respect the wishes of those who want to use the repeater.

In short KD0SO, don't take down your link, and don't take personal offense. Move the input frequency from the national simplex frequency. A frequency selected with the advice of the Colorado frequency coordinator would be the best, but even a less popular simplex frequency would be better than .52. I enjoy repeaters, and I enjoy simplex, but I don't like the idea of my signal being linked to other frequencies without my knowledge.

Sincerely,  
Mark Forbes, KC9C

\*\*\*\*\*

16 March 1988

PPRAA  
Colo Spgs, CO  
80935

Re: Linking 146.52 simplex to 448.000

In reference to 146.52 being remoted, yes it is legal! It does not help anyone who does not have a 440 rig and currently it does not help an operator with 440 capability get back to the one on .52 at all. It just lets a person listen to what is going on on 146.52. It does annoy a person scanning 440 when their scan locks up on 448.000 and they are receiving what is being said on .52 on two receivers. I believe a person talking on 146.52 simplex should believe that he is talking on simplex and not being remoted to a repeater. I have made my feelings known to KD0SO prior to his release of his article in O-Beat, that was in person. It is legal but not morally right! This is my own position.

Signed,  
Al Vrooman, N7CMW

## VHF & ABOVE NEWS

by NKOP

E-SKIP!! Any day now I expect to hear KH6 on 50 MHZ. Are you ready?? Its been a long time since most of us have heard any decent skip on VHF so if you are a bit rusty pick up your April QST and turn to page 33 and get a refresher course. The article is very comprehensive and well written. For a more basic introduction turn to page 57.

Lets here it for the local boys--Page 72 April QST has a nice summary of last summers DX-trip to Pikes Peak by KXOQ and W0MXY. Did you know this was the first QSO between Colorado and Texas on 2.3 GHZ?? Nice job guys I know how COLD it is on Pikes Peak holding on to aluminum dishes in the wind for hours!!

For those of you who are not fans of the ARRL and are looking for something useful to do with QST magazine this months Hints and Kinks is for you! QST's plastic mailing cover can be used as heat shrink material--Yes its true...I tried it! So get out your matches and have at it.

DAYTON HAMVENTION plans to have an extensive VHF program this year. This is due to the newly formed Midwest VHF-UHF Society.

SPRING SPRINTS--Don't forget the Spring sprints this month. First one is 144MHZ on Monday April 11. The usual VHF Rules apply. See your QST contest section for more details.

METEOR SHOWER--The Lyrids meteor shower is predicted to peak at 1730 UTC April 21, 1988. For information and schedules tune in to 3.818 MHZ on Sunday evening or anytime during the shower.

VSWR--Did you know that your coax feed-line loss affects your VSWR at the antenna? I have a computer program (freeware) that calculates it--if you're not getting out like you think you should try replacing that old radio shack RG-8U with some fresh cable. The new Radio Shack coax boasts 96% outer shield now.

That's it for April. I hope I have some tall E-SKIP tales to tell next month.

73's and C U on the Bands Ron NKOP



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WHEN: Sat, 07 May 88 at 9:00 AM  
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WALKINS: Allowed  
TALK-IN: 146.37/97

### NEEDED

1. Original FCC license , if any
2. A copy of your FCC license, if any
3. Two forms of positive identification (driver's license, birth certificate, passport or library card)
4. \$4.55 check or M.O. payable to ARRL/WEC
5. Completed FCC form 610
6. If physically handicapped, a physician's certificate describing the nature of the disability. Arrangements should be made prior to testing

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For more information contact:  
Irene Long 389-0730  
Peter Lafosse 495-4829

# ANTENNAS

By Chris Smith  
N6OE

Baluns occupy a position of folklore and mystery in ham radio. They have been credited with suppressing TVI, preventing RF in the shack and increasing the gain of beams. Some say that baluns are a waste of money and effort and that they can increase the VSWR of your antenna. What are the facts and what are the fictions of baluns? For that matter, what are baluns? The name derives from the expression, balanced-to-unbalanced transformer. The concept of "balance" may be unfamiliar. It can mean a balance of voltages with respect to chassis or earth, which occurs when two ungrounded conductors have equal and opposite voltages with respect to ground. More appropriate for antennas, it implies equal currents in opposite halves of a symmetric antenna. (Since the voltage or current is alternating, the magnitude and the phase must both be considered.)

If a balun is really doing its job, it will force equal currents in the halves of a symmetric antenna. As a consequence of Kirchoff's current law, no net current can then exist on the feeder (at the point where it joins the antenna halves). Since the net current is what radiates from the feeder, no net current means no feeder radiation. If the antenna is a beam, feeder radiation is likely to occur in directions other than where the beam is pointing. If the balun prevents feeder radiation, it can increase the effective gain of the system.

A balun can also reduce TVI. This can come about two ways. If the feeder to the antenna parallels some TV lead-in, eliminating feeder radiation can reduce coupling to the TV and reduce TV overload. The second way a balun can reduce TVI is by reducing harmonic radiation from the transmitter. This occurs when the balun acts as a lowpass filter. Many ferrite core baluns act as lowpass filters, but this is an unreliable way to suppress harmonics. If you suspect the presence of harmonics on your signal, use a lowpass filter!

A balun can also increase the VSWR of your system. This too can occur two ways. The balun can reflect energy back down the feeder (this is called "insertion VSWR"). If your antenna is not matched to the feeder, it will reflect some of the RF. If this reflected RF could radiate from the feeder,

it would not be seen back at the transmitter as VSWR. (It can also cause "RF in the shack.") But the balun, by eliminating feeder radiation, sends the reflected RF back to the transmitter as VSWR.

How should the performance of a balun be rated? Several properties come to mind. An obvious one is, "how much power can it handle?" This is easy to test if you have a kilowatt or two and don't mind smoke tests.

Given that a balun's purpose is to balance, an important measure of performance is its degree of balance. This can be measured in both "fair" and "unfair" ways. The "fair" way is to give the balun a matched, balanced load and to look at the voltage across each half. The accompanying figure shows such a measurement for a Van Gordon HI-Q Balun. It's a one-to-one balun, so a balanced load of two 25 ohm resistances to ground was provided. The performance was good: the phase (not shown) was always within 5 degrees of 180, and from 1 to 10 MHz the magnitudes were within 1 dB of each other. (This is remarkably good for a \$15 balun. At least one \$70 balun was much worse.) An "unfair" measurement would place an unbalanced load across the balun: after all, few antenna systems are perfect. It can be argued that a good balun will still force an equal current through both loads. This was not tried with the Van Gordon balun.

Another measure of performance is its insertion VSWR. To do this "fairly," the balun is given the proper balanced load as before, and the resulting VSWR is measured. Ideally, it would be 1 to 1. It usually isn't. The other figure shows the measured VSWR for the Van Gordon balun. The VSWR is below 2 to 1 below 20 MHz, but from 20 to 40 MHz it rises from 2:1 to over 3:1. Just what the VSWR will be for any given system depends on the antenna impedance and coax loss as well as the insertion VSWR. Like most things, it can get pretty complicated.

There are other ways to rate baluns, most of which are used in commercial practice. The generally simple nature of amateur stations has permitted the manufacturers to avoid a lot of hard questions about balun performance. As standards of performance continue to rise in amateur radio, these will have to be addressed.

## DITS AND BITS

### FOR SALE

Azden PCS 4800 10 Meter FM Transceiver \$175.00  
Cushcraft 10 Meter Ringo Antenna \$25.00  
Cushcraft 2 Meter Ringo Ranger Antenna \$ 20.00. Call Bob KC8BY 488-0859

### WANTED

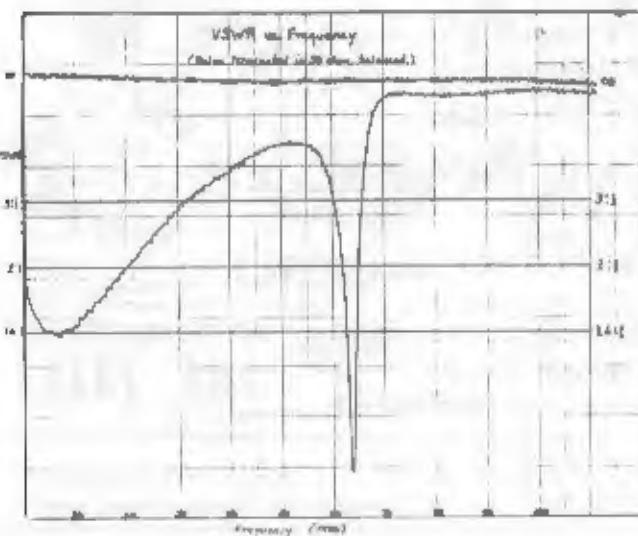
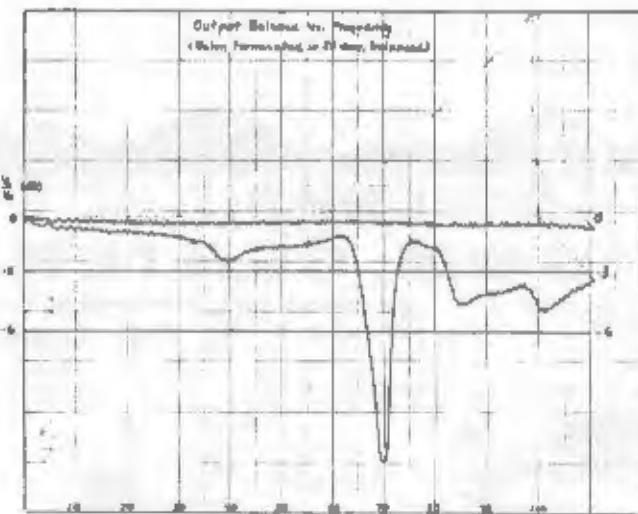
Used 2 Meter FM Transceiver (synthesized or crystal). Call Bob KC8BY 488-0859

### WANTED

Manual for Swan Hornet TB3H antenna. Call Paul KD8SO 591-2703

### WX SPOTTERS MEETING

April 17, 1988, 1:30 pm in the Civil Defence Office in the basement of the City Police Building. Contact Malcolm Benton KE9S or Bud Widmar WB8TJB.



### RAINFALL REPORTER

Begin collecting the amounts of rain you receive and send your reports to Malcolm E. Benton, 15365 Deby Drive, Cole Spgs, CO 80920. The season runs from April through September. These reports are turned in to the National Weather Service in October and will be sent to the Penrose Library where they are available for public use.

### CONT'D from Page 2

of positions. At resonance, the SWR was near perfect. So the SWR measurements were consistent with the antenna range measurements.

One can't beat the rubber duck antenna for convenience, but on those occasions when more gain is required, the best bet is the 1/2 wave antenna. If you want more information on these measurements, I would be happy to bore you to death with the excruciating detail.

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## ANTENNAS SYSTEMS BY KD9SO

Recently I had a request to talk about an antenna system, that I haven't seen in some time. I recalled reading about this type of antenna back about 1981. I have previously developed such a system and found that it worked very well. Based on my previous experiments, I decided to see if I couldn't apply my previous knowledge and use this system, to overcome a problem. I am/was presently having in communicating, with a short distance, one hop signal.

In the past you no doubt will recall, I have mentioned the importance of a good counterpoise. In this case the use of the counterpoise will decide, just where my signal will go and it's use solved my problem quite nicely. In short this article will be on "THE MOVABLE COUNTERPOISE"....

The first thing I needed to know, is what the single hop distances were in relationship to the Radiation angle, of my dipole antenna. Part of the answer could be found in the ARRL antenna handbook on page 17, fig 1-10. Since the distance involved, was a distance of about 530 miles, from here to Salt Lake, I determined, a radiation angle of from 40 to 70 degrees, would solve my needs. Since the density of the F-2 layer, is not always consistent, I decided to shoot for 65 degrees. This would give me single hop distance of about 300 to 600 miles. Next I went to my computer program "TAKE OF ANGLES", which has previously been talked about, in an earlier issue of ZERO BEAT; and determined that a counterpoise set in at 1/8 wave below the dipole, would give me the desired angle. That's great, but what if I desired to use the dipole for longer ranges? What to do. Well here's where the trick comes in. Practically speaking, what I have constructed, is a two element wire beam that points straight up, with the driven element 1/4 wave above the earth. The counterpoise is 1/8 wave below it. The counterpoise,(Reflector), is just like any other reflector, except that I have put a centerfeed on it also. To this, I have attached a 1/2 wave length of coax, with a toggle switch at the shack end. When I want the counterpoise, for the 65 degree angle of radiation, I close the switch. When I want a lower angle of radiation, I open the switch. Of course I have a beam and it works well. This antenna though gives me the flexibility, I need for the short haul. Does the principal work on other antennas? You Bet. Here are a couple of possibilities.

for you. The shortened dipole will help you, if you have a problem with space. I can't do all of the variations since time and space, won't permit it. However, if you wish to work out a special situation, please call me, at 591-2703 and I will help you to design your own special system for HF, to meet your needs. This includes helping you to wind coils, etc.

Now why all this movable counterpoise system, what will it do for me?? Good question. Lets suppose you want to chat with a station in England for example. The distance to that location, is about 4500 miles. We certainly want the best possible signal to be heard well, correct?? If we consider the hop distances due to angles of radiation this is what we come up with; FOR 20 METERS AT 14.250 MHZ.

TAKE OF ANGLES	NUMBER OF HOPS
19 DEGREES	3
26 DEGREES	3
38 DEGREES	5
47 DEGREES	7
65 DEGREES	8

Obviously, if we use three hops we will have the most signal reaching good ole

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England. Another point that will certainly help us is the fact, that the lower the radiation angle, the greater the minimum/maximum landing range, of our radiation as well.

With practical thinking however, we can see the antenna would have to be about 50 feet above the counterpoise to achieve a 19 degree angle of radiation. If however, we use quarter wave spacing, say 35 feet. We achieve an angle of 26 degrees and can do the job in 4 bops. So a height problem is certainly not in the picture here.

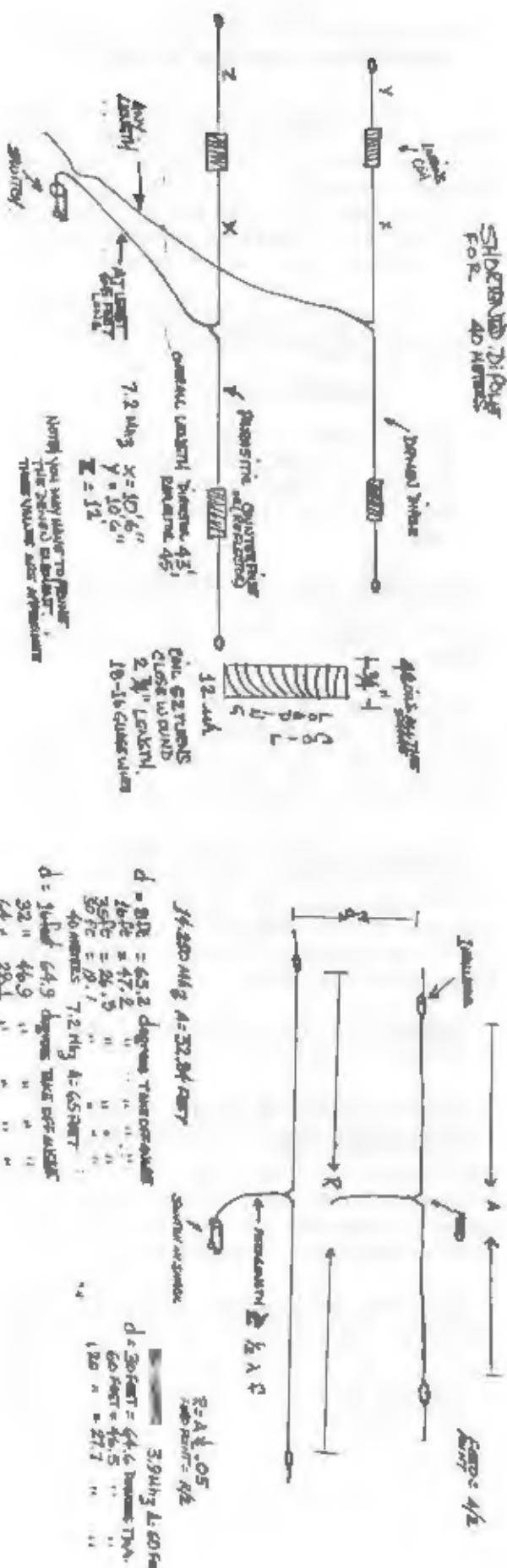
As you can see, This method of placing a fixed counterpoise beneath the radiating element gives us a chance to put our RP pattern were we want it.

Yes you can rig a 40 meter antenna in an inverted vee configuration, should you desire. You'll need a 60 foot tower, for the apex of the driven element and the reflector can be set at about 32 to 34 feet below that to achieve best overall performance, for both state side and DX operation.

Next month I will address antenna tuners.

Best of 73's Paul KDM5O

See Side Panel for Drawings...



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*****  
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# MINUTES OF MARCH GENERAL MEETING

Submitted by Al NOCMW, secretary

The general meeting of the Pikes Peak Radio Amateur Association was held at Giuseppe's Old Depot Restaurant, Wednesday evening 09 March 88. The meeting was called to order by the president Ron NK&P at 19:30. There were approximately 51 members and guests present.

The minutes of the previous General Meeting and Board meeting were approved as printed in O-Beat.

## Committee Reports

Note: Anyone wishing to help out on any of these committees, please contact the chairman at the phone number listed. Thank you for your support.

### Treasurer - Bud NODDF (599-7699)

Previous balance was \$1544.60, income of \$337.00, expenses of \$160.99 leaving a balance \$1720.61.

### Interference - Ron NK&P (593-8352)

One case of interference happening on a T.V. Problem was attributed to improper connection of cable TV line to TV by installer. Cable company has fixed the problem.

### Education - Harley KCFTO (634-4555)

Next Novice classes will commence April 9. It will run from 7pm to 9pm every Tuesday and Friday evening. Location will in the Civil Defence Training Room beneath Police station on Kiowa.

### Publicity - Karen NIFED (495-0095)

Nothing to report.

### Colorado Council of Amateur Radio Clubs (CCARC) - Oak K8ROL (591-1426)

Bud NODDF attended for the atting Oak. Next meeting has been scheduled for Colorado Springs in September. Topics covered included the Boulder antenna fund and stolen radios. Contact Bud for more information.

Deaf and Blind School - Jim WA9ABB (598-7543) Chris KB0BRV has now upgraded to Tech. Still working with the other students on Tuesday evenings. There is still a need for Elmers.

O-Beat Keith NYOT (637-1525)

Outlined the various ways in which articles may be submitted. Bottom line any way at all.

### ARES - Al NOCMW (473-1660)

ARES meets every Wednesday night except for Club meeting nights on the 37/97 repeater at 1900 local. Also the Eastern Slope Net on Sundays at 0800 on 3.928 as well as 0830 on the 34/94 repeater in Denver. Would like to see more participation.

### Public Service - Mike KETER (636-1290)

Mike was not available but it was disclosed that the Walk for Mankind is April 9 and the Walk for America is May 15.

### VE Testing - Irene AH6GF (389-0730)

VE Testing will be Saturday 07 May 88 at the First United Methodist Church on Nevada and St. Vrain.

### Old Business

The Field Day this year will be held at the Air Force Academy in picnic area 3. Max KD8EL is still looking for station managers and can be reached at 590-9849.

Jim WA9ABB disclosed that the Club Picnic will also be held in picnic area 3 of the AFA. It is scheduled for 29 Aug 88.

**Centennial ★★ RCA  
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### New Business.

SWAPFEST LES KCQNC stated that the grand prize this year will be a Kenwood TS-140. Raffle tickets are ready for distribution and someone is needed to supervise raffle ticket sales as Les will be tied up doing other things for the Swapfest. Flyers will be made up and an Afghan has been made for the club by Mary Chatelain so that it may be raffled off as well. She will be reimbursed for the cost of the materials.

### Prizes - Keith NYST:

Winners were:

KA8WIE Fred	- Handbook
W9RNT Chuck	- RTTY Unit
WD0FHG John	- Advanced Class Handbook
NX8E Chris	- Antenna Balun
KB0BLQ Sara Lee	- Repeater Directory

### Program:

After the break, Don WD0BSZ presented a program on traffic handling. He was assisted by Irene AH6GF and Fred KA8WIE. It was very informative.

The meeting was adjourned at 2130.

The next meeting will be 13 Apr 88.

## MINUTES OF DECEMBER BOARD MEETING

*submitted by Al N0CMW*

The board meeting was held on Monday 14 Mar 88 at the home of Chris NX8E. Meeting was opened by Vice-Pres Keith NYST at 1900 hrs. Present were Bud N0DDF, Keith NYST, Al N0CMW, Chris NX8E, Bdale N3EUA, Nick KG5N, Jeff KA0ZDY and Les KCQNC.

Malcom KE9S will be contacted by Keith NYST to see what progress has been made in setting up programs for the Club Meetings.

The board discussed the need of a battery for the club trailer. It has been held in abeyance pending further investigation.

Karen NIFED was contacted about the Swapfest flyers. Nick KG5N will get draft from her and take care of the print-

ing. This has to be done by 20 Mar so that copies may be available for the Denver/Aurora swapfest.

Tickets for the swapfest have been procured by Les KCQNC and a raffle ticket chairman will be needed. He will also get a poster generated for the Afghan drawing.

There will be VE Testing at the swapfest after all. Chris, Nick and Keith will hold one on behalf of the club as it has been advertised in various flyers that one would be held at the swapfest. Chris will act as the liaison between VE and ARRL. Bud will be Mail Manager and get a guarantee on a room. Al will set aside 5 tables and 15 chairs for the VE's. It will commence at 11 am.

\$75.00 has been donated to the D&B school for the purchase of an antenna resonator and coax.

The club will sponsor the next meeting of the CCARC in Colo Spgs in September. Bud and Oak will head up this effort and they have been authorized to spend up to \$200.00 for this project.

The slides used to assist the instructors in teaching the ham radio classes will be upgraded to transparencies. Nick and Bdale are to head this effort up and have been authorized to spend up to \$100.00. They will try to have them ready for the 2nd set of Novice classes coming up.

Due to popular demand (we think!), the *4Beat* will now publish 350 copies a month vics 325.

Unless a volunteer is identified the club will not participate in the Pikes Peak HU Climb this year.

The next board meeting will be held at the QTH of Bud N0DDF.

There being no further business, the Board adjourned at 2100 hrs.

## APRIL MEETING

The next regularly scheduled meeting of the Pikes Peak Radio Amateur Association will be held on Wednesday, 13 April 1988 at 7:30 pm at Biuseppi's Depot at #10 Sherman Street. The program will be on Cable Distribution & Interference by Bob Brietske of Citizen Cable.

## MILEY'S RADIO

Jess KOTAA 719 W. 7th St. Florence, Colorado 81226 (303) 784-3040  
Hours 9 to 6 Tuesday through Friday — Saturdays 9 to 1 — Evening Hours 7:30 to 10 (Call Ahead)  
Closed Saturday 1 PM, Sunday & Monday  
New Area Code Effective 3/1/88 (719) 784-3040

UNTIL MAY 4 PLEASE CALL HS WE MAY BE GONE

Hamfest Schedule for 1988 as of February 1:

April 8—April 11 Moorland, OK  
April 21—April 25 Bean Feed—Las Cruces, NM  
April 29—May 3 Sierra Vista, AZ  
Will not be home from April 20 to May 4  
May 21 Colorado Springs  
**JUNE** May 10—May 11 Superfest, Loveland, CO  
Friday Noon—9 P.M., All day Saturday, No Sunday Swapfest  
No Hamfests Scheduled June 4, 18 or 25 —  
But expect Grand Junction and Levelland, TX  
to choose two of those dates.  
July 2—July 4 None Scheduled  
July 9—July 10 Laramie, WY  
July 16—July 17 East Glacier, MT

July 22—July 24 Woodland Park, CO  
July 30—July 31 Nothing Scheduled Yet  
August 6—August 7 W.I.M.U.—Jackson Hole, WY??  
August 13—August 14 Probably Amarillo, TX  
August 20—August 21 None Scheduled  
August 27—August 28 None Scheduled  
September 3—September 4 Alamogordo, NM  
September 9—September 11 Campout Hamfest Laramie, WY  
or National Convention in Portland, OR  
September 16—September 18 Wichita Falls, TX (Tentative)  
September 23—September 25 Santa Fe, NM  
October 1—October 2 Lubbock, TX  
October 8—October 9 Lubbock, TX  
October 15—October 16 Nothing Scheduled  
October 22—October 23 Nothing Scheduled  
October 29—October 30 Nothing Scheduled  
November 5—November 6 Odessa, TX  
December 3—December 4 Apache Junction, AZ (Tentative)

We will be closed and traveling to Hamfests in February and for a working vacation. Will get your phone messages by remote and call you that evening or next morning. Please leave both day and evening phone numbers on our machine. Will be back home in time to make the Kearney, NE and Midland, TX hamfests.

Not running a list of new equipment this month because of probable price increases on imports February 1 and March 1. We have most new equipment in stock or will ship it to you direct. If you're looking for a certain rig — put a message on our machine and we'll try to find it for you.

73's — Jess  
2/88

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### Membership Application PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.

P.O. Box 16521

Colorado Springs, CO 80935

Name \_\_\_\_\_

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Are You An ARRL Member?  Yes  No Telephone \_\_\_\_\_

Full Member \$12.00  Family Membership \$15.00  Newsletter Only \$4.00  
 Age 65 or older, or under 18 \$8.00

Additional Names \_\_\_\_\_ Call \_\_\_\_\_ Class \_\_\_\_\_

Associate Member \$8.00  (Outside Teller & El Paso Counties.)